

Exhibit 4

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REPORT OF FINDINGS

JERI GILL-MCKENZIE RESIDENCE

NOVEMBER 28, 2020

Property Address:
3424 Mount Washington Road
Ardmore, OK 73401

Prepared For:
Mr. David Goldsholl
Hanover Insurance Group
440 Lincoln Street
Worcester, MA 01653
dgoldsholl@hanover.com

Prepared By:
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Day Engineering Consultants, LLC



11-28-2020

Hanover Insurance Group File #: 19-00740685
Day Engineering Consultants, LLC File #: 20118



BACKGROUND

On November 10, 2020, Day Engineering Consultants, LLC (DEC) inspected the residence of Jeri Gill-McKenzie located at 3424 Mount Washington Road in Ardmore, Oklahoma. The residence was a wood-framed structure whose exterior walls were clad with a combination of brick and stone veneer. The wood-framed superstructure was assumed to be supported by a concrete slab-on-grade foundation. The structure had a hipped and gabled roof that was covered with laminate-style asphalt composition shingles. A detached storage building clad with a metal panel wall and roofing system was located on the property to the east of the residence. The residence and storage building are shown and identified in the aerial view of the property contained in Figure 1 below. According to property tax records available on the Carter County Assessor's Office website, the residence was constructed in 2012. For the purposes of discussion within this report, the front elevation of the residence was considered to be west-facing (Attachment A, Photographs 1 through 4).

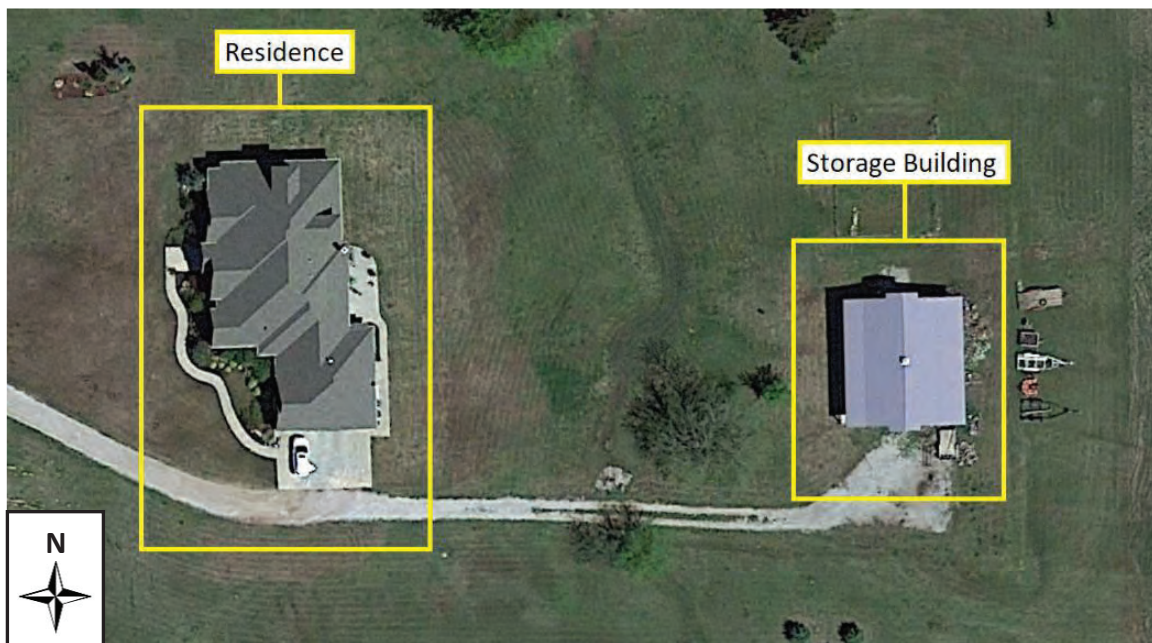


Figure 1: Aerial view of the property with the structures identified.

Reportedly, the roofing system of the residence was damaged by hail on or about April 22, 2020. Mr. Brian McCarty of Service First Roofing and Construction was present during the inspection and directed DEC's attention to areas of concern.

PURPOSE

Hanover Insurance Group retained DEC to determine the extent of hail damage, if any, to the roofing system of the residence.



CONCLUSIONS

It is DEC's professional opinion that:

1. The asphalt composition shingle roofing system of the residence was not damaged by impact from hail.
2. Varying extents of granule loss were observed on the shingles of the roof that were consistent with age-related deterioration and wear/weathering of the roofing system.
3. Areas of damage were observed on the shingles of the roof that were consistent with unintentional mechanical damage and/or material deficiencies.
4. The metal panel roofing system of the detached storage building was not damaged by impact from hail.

REFERENCED MATERIALS

The following documents and materials were reviewed and/or referenced as part of DEC's investigation, and/or contain information pertinent to the discussion and conclusions presented herein:

1. Carter County (Oklahoma) Assessor's Office website property search, URL: <http://www.cartercountyassessor.org/search.asp>
2. Storm Events Database search provided by the National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI), URL: <http://www.ncdc.noaa.gov/stormevents/> (Attachment B, Weather Data).
3. CoreLogic Hail Verification Report #12733206 (Attachment B, Weather Data).
4. StormIntel Verify Hail History Report from WeatherGuidance Forensics Unit (Attachment B, Weather Data).
5. Morrison, Scott J. (2002, September 25-27). *Dents in Metal Roof Appurtenances Caused by Ice Ball Impacts*. Presented at the 12th International Roofing and Waterproofing Conference, Orlando, FL.
6. Marshall, Timothy P.; Herzog, Richard F.; Morrison, Scott J.; Smith, Steven R. (undated). *Hail Damage Threshold Sizes for Common Roofing Materials*. Dallas, TX.
7. Ladder Now Maestro Report from a roof inspection on September 10, 2020 by Korbin Leach.
8. Photographs of the roofing system of the residence provided to Hanover Insurance Group by Service First Roofing and Construction via four emails dated October 12, 2020.
9. American Society of Testing and Materials, Subcommittee E30.11. (multiple editions). *Standard Practice for Reporting Opinions of Scientific or Technical Experts*, ASTM E620. West Conshohocken, PA.
10. American Society of Testing and Materials, Subcommittee E30.11. (multiple editions). *Standard Practice for Evaluation of Scientific or Technical Data*, ASTM E678. West Conshohocken, PA.



PROVIDED INFORMATION

During DEC's inspection, Mr. McCarty was interviewed. As follows is a general understanding of his comments, which may or may not be consistent with DEC's observations or professional opinions:

- He was not aware of any roof leaks/water intrusion having occurred at the residence.
- He had not been on the roof due to its relatively steep pitch. However, a business colleague of his had been on the roof and informed him that hail damage was present and provided photographs of the roof. These photographs were then sent to Hanover Insurance Group (see item #8 in the REFERENCED MATERIALS section of this report).
- An area of shingles on the rear/east-facing roof slope had been damaged by firemen during a fire at the residence that occurred approximately one year prior to DEC's inspection.
- He inspected the metal panel roof of the detached storage building and did not see any hail damage.

WEATHER DATA

In conducting this investigation, DEC obtained and reviewed available historical weather data regarding hail events with Carter County, Oklahoma from the National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI) website for the time period of April 15, 2020 through April 29, 2020. The published data available on this website originates from data collected at National Weather Service (NWS) recording sites and trained spotter reports. For the aforementioned time period, there were four reported hail events within Carter County. These events have been summarized below in order of increasing distance from the property:

- April 22, 2020 – 1.75-inch diameter hail reported 7.4-miles northwest of the property
- April 22, 2020 – 1.75-inch diameter hail reported 11.3-miles northeast of the property
- April 22, 2020 – 1-inch diameter hail reported 21-miles west of the property
- April 21, 2020 – 0.88-inch diameter hail reported 27.5-miles northwest of the property

DEC also obtained and reviewed available historical weather data regarding hail events in the form of a CoreLogic Hail Verification Report. The data provided in this report was generated using CoreLogic's proprietary hail verification model for the time period of January 1, 2009 through November 17, 2020. According to the CoreLogic report, hail with an estimated maximum diameter of 1.2-inches occurred at the property on April 21, 2020. The next most recent report of hail at the property was on April 13, 2018 when hail with an estimated maximum diameter of 0.8-inch was reported.

Lastly, DEC obtained and reviewed historical weather data regarding hail events in the form of a StormIntel Verify Hail History Report from the WeatherGuidance Forensics Unit. Similar to CoreLogic, WeatherGuidance utilizes a proprietary hail verification model that is based on the examination of ground-based storm reports and/or radar-indicated hail detection algorithms. For the time period of April 15, 2020 through April 29, 2020, the available data from WeatherGuidance revealed one report of hail at the property. On April 21, WeatherGuidance reported hail with a maximum diameter of 1-inch at the property.



Due to variations in reporting, as well as the compact nature of hailstorms, hail size at the property may not have been the same magnitude as was recorded elsewhere within the subject or neighboring counties or as reported herein. Rather, this weather data is included to provide an indicator of storm events that may have occurred in the vicinity of the property. Additional weather data may be available at a later date. Full NOAA NCEI, CoreLogic, and WeatherGuidance hail event data reports are provided as Attachment B of this report.

DISCUSSION

Hail Indicators

In conducting this investigation, DEC inspected the peripheral building elements on the roof and around the property in an attempt to gain a better understanding of the approximate size of the hailstones that may have impacted the roofing system. Two good indicators of the size and directionality of hail are spatter marks and indentations in soft metals. Spatter marks are formed when hail removes some oxidation or organic growth from either metal, plastic or wooden surfaces. These marks tend to widen and propagate outward from the impact location; therefore, measurement of the width of the narrow end of spatter marks has been found to closely correlate with the actual size of the hailstones that created them. Hail-related spatter marks will eventually fade and blend in with the surrounding material surface. Although the time it takes for spatter marks to blend in is variable with weather exposure, it has been DEC's experience that such marks commonly remain visible for approximately one year following a hailstorm event, but in some cases can remain visible for up to two years. Conversely, indentations in metal surfaces do not weather away like hail spatter marks and as such the metal becomes a permanent record of all previous storms. It is important to understand that soft metals, such as lead and aluminum, are susceptible to denting even by hailstones that have insufficient size and energy to damage the roofing system. Therefore, the age and size of such indentations must be carefully considered with all other peripheral evidence when assessing hail damage to roofing systems.

Inspection of the peripheral building elements on the roof and around the residence and inspection of the metal roof panels on the detached storage building revealed isolated markings consistent with hail spatter marks that measured up to approximately 1/2-inch in width (Attachment A, Photographs 5 through 8). Evidence of indentations consistent with impact from hail were observed in some, but not all, of the gutter downspouts and soft metal appurtenances on the roof (Attachment A, Photographs 9 through 13). These indentations typically measured up to approximately 3/8-inch in width. Ice ball impact testing studies have shown that the strongest correlation between hailstone diameter and dent size is the smallest measured width of the inner dent, which is defined by the well-defined steep slopes about the center of the impact. Furthermore, the relationship between hailstone diameter and dent size is specific to appurtenance types, profiles, and thicknesses. In the case of the indentations in the soft metal appurtenances, ice ball impact testing suggests that the inner dent width-to-hailstone diameter is approximately 0.5. As such, the sizes of the aforementioned indentations in the soft metal appurtenances (3/8-inch) indicated that the property had been exposed to hailstones that were up to approximately 3/4-inches in diameter.

Ice ball impact testing studies similar to those mentioned above have also been used to determine the damage threshold for typical roofing systems. The damage threshold is generally defined as the hailstone size required to cause damage that compromises the water shedding capabilities and/or decreases the anticipated service life of the roofing system. In the case of laminate-style asphalt composition shingles, the damage threshold has been determined to be hailstones measuring approximately 1 1/4-inches in diameter. Therefore, DEC found no evidence in the



form of spatter marks or indentations in soft metal appurtenances that indicated the property had been exposed to hailstones in excess of the typical damage threshold of the asphalt composition shingle roofing system. There was evidence in the form of historical weather data that indicated hailstones at or near the typical damage threshold of the roofing system may have occurred in the vicinity of the property.

As previously discussed, spatter marks eventually weather away while indentations in the soft metal appurtenances remain permanently visible. This is important to note because there was a difference in hail diameter indicated by the spatter marks (1/2-inch) as compared to the hail diameter indicated by the indentations in the soft metal appurtenances (3/4-inch). This suggested that sufficient time had passed for the spatter marks associated with the hailstones which caused the indentations in the soft metal appurtenances to weather away. Additionally, the available data from CoreLogic and WeatherGuidance indicated hail with a diameter of 1 to 1.2-inches had occurred at or near the property on April 21, 2020. The size of the spatter marks observed at the residence (1/2-inch) was not consistent with hail of this diameter having occurred at the residence during the previous year. Lastly, it is important to understand that the hardness and density of individual hailstones at the property may vary from the ice balls used for impact testing studies. Exposure to a particular size of hailstone that exceeds the damage threshold of the roofing system does not necessarily mean that damage will occur to the roofing system.

Hail Damage Evaluation - Residence

Hail impact-related damage to asphalt composition shingle roofing is typically evidenced by a random-distribution of roughly circular blemishes. It has been DEC's experience that these blemishes are generally no smaller than approximately 3/4-inch in diameter, which are characterized by missing granules, granules forced into the shingle mat, and a reduced cross-section (bruising), dimpling, and/or fracturing of the shingle mat. Bruising of the shingle mat produces a weak spot that feels softer and more pliable than the remainder of the shingle. Hail-related damage is typically most severe along ridges, rakes, and eaves where substrate support for the shingles is discontinuous. Due to the directional nature of hailstorms, it is typical for hail damage to roofing to concentrate on the slope of the roof that is most perpendicular to the direction of the storm as this will result in greater energy transfer from the hailstone. While distribution of such damage is random, the frequency of damage is typically consistent across any one affected slope of a roof with the exception of areas that are shielded from hailstone impacts by overhanging features such as upper stories, roof overhangs, or trees. Hailstone impacts to the surface of the roof most parallel to the trajectory of the hailstone commonly glance off the surface of the roof, imparting less damage at impact. DEC's visual and tactile inspection of the asphalt composition shingle roofing system of the residence found no evidence of damage consistent with impact from hail as described herein. (Attachment A, Photographs 14 through 29)

Therefore, it is DEC's professional opinion that *the asphalt composition shingle roofing system of the residence was not damaged by impact from hail.*

During inspection of the roof of the residence, areas of granule loss were observed that are commonly mistaken for hail impact-related damage. Inspection of these blemishes revealed characteristics that were not consistent with damage by impact from hail. Although some of the blemishes were roughly circular in shape, others were linear and/or occurred along the leading edges of the shingles. Other areas of granule loss exhibited varying shapes and sizes not consistent with impact from hail. As previously discussed, it has been DEC's opinion that blemishes caused by hail impact are typically no smaller than approximately 3/4-inch in diameter. Some of the blemishes observed by DEC measured approximately 1/4-inch in width.



Furthermore, there was an absence of granules driven into the shingle mat and the blemishes did not exhibit a perceptible softness under pressure of finger. Thus, DEC concluded that the areas of granule loss were consistent with weathering of the shingles. (Attachment A, Photographs 30 through 37)

Weathering is a general term used to describe the natural deterioration process that roofing systems undergo over time. The rate at which a roof covering weathers depends on many factors including material quality, structure orientation, geographic location, temperature and weather cycles, material color, roof slope, roof elevation, and attic ventilation. A common asphalt composition shingle roofing distress that is directly attributable to weathering is granule loss. The adhesion qualities of asphalt deteriorate with time; therefore, it is expected that granules will be released as shingles age and weather. Granules are part of the wearing surface on the shingle and exposure to foot traffic, weather, and variations in temperature are part of the wearing process. At some areas of granule loss, fibers of the shingle mat were visible and the exposed asphalt of the shingle exhibited a light gray coloration. This was consistent with long-term weathering of the exposed asphalt of the shingle that suggested the granules at these areas had been missing for more than one year and were not the result of a weather event that reportedly occurred in April 2020.

Therefore, it is DEC's professional opinion that *varying extents of granule loss were observed on the shingles of the roof that were consistent with age-related deterioration and wear/weathering of the roofing system.*

Other conditions were observed on the roof of the residence that were consistent with mechanical shingle damage and/or potential material deficiencies. Mechanical shingle damage refers to a wide variety of damages, intentional or unintentional, resulting from sources other than weather or natural material deterioration. A few examples of commonly seen mechanical shingle damage include damages caused during installation and/or maintenance such as bends and/or tears at shingle edges and/or corners caused by the dragging of feet, granule loss caused by foot traffic, and linear scratches and/or cuts caused by tools. Granule loss and/or abrasions caused by foot traffic commonly occur along roof valleys that are utilized for roof access. Various areas of damage consistent with unintentional mechanical damage were observed by DEC. (Attachment A, Photograph 38)

Other areas of damage/granule loss were observed that exhibited a frequency and/or pattern not consistent with having resulted from impact from hail. On a west-facing roof slope, linear abrasions were observed at the end of each shingle course directly adjacent to a roof valley. At several locations on south-facing roof slopes, widespread and extensive granule loss was observed to occur on groupings/areas of shingles. However, groupings/areas of shingles directly adjacent and on the same roof slope did not exhibit a similar extent of granule loss. This pattern of damage suggested potential material deficiencies related to the shingles (i.e. a defective bundle of shingles). At the areas of granule loss, the exposed shingle mat exhibited a light gray coloration and the mat fibers were visible. These characteristics were consistent with long-term weathering of the exposed asphalt of the shingle and indicated that the granule loss was not a recent occurrence. (Attachment A, Photographs 39 through 44)

Therefore, it is DEC's professional opinion that *areas of damage were observed on the shingles of the roof that were consistent with unintentional mechanical damage and/or material deficiencies.*



Hail Damage Evaluation – Storage Building

Hail impact-related damage to a metal panel roofing system can be evidenced in a variety of ways depending on the size and energy of the hailstones that impact the roof. Typically, in the case of impact from hailstones measuring between approximately 1 and 2½-inches in diameter, the roof surface will exhibit a random distribution of dimple-like, aesthetic only indentations. It has been DEC's experience that these indentations are typically no smaller than approximately ½-inch in diameter and do not adversely affect the water-shedding capability or the anticipated service life of the roofing system. However, the indentations created by impact from hailstones measuring approximately 2½-inches or greater in diameter are typically deep enough to cause rupturing of the metal and spalling of the surface coating around the point of impact. In addition, impacts by hailstones of various sizes can result in disengagement/separation of the seams which can affect the water-shedding capability of the roofing system. DEC's visual and tactile inspection of the metal panel roofing system of the detached storage building found no evidence of damage consistent with impact from hail as described herein. (Attachment A, Photographs 45 through 50)

Therefore, it is DEC's professional opinion that *the metal panel roofing system of the detached storage building was not damaged by impact from hail.*

CLOSURE

This report is for the exclusive use of our client and its representatives. Any unauthorized re-use or reproduction of this report and/or any of the information contained herein shall not be permitted without prior written consent from DEC or the client. The information and professional opinions contained within this report are based upon information made available to DEC as of the date of this report. In the event that additional information becomes available that could potentially impact the information and/or professional opinions contained in this report, DEC reserves the right to review the information and determine the impact, if any, on the contents of this report. DEC appreciates the opportunity to provide this service to you. If you need any further assistance, please do not hesitate to call. The electronic version of this report is a convenience copy. An original signed and sealed copy can be provided upon request.

Corbin Swain, P.E.
Day Engineering Consultants, LLC

Attachment A, Photographs
Attachment B, Weather Data



ATTACHMENT A

Photographs

Not all photographs taken during our inspection have been included in this report. However, all photographs have been retained in our files and can be made available upon request. Although some of the photographs contained herein may have been cropped from their original size or had the brightness/contrast enhanced for clarity, no significant changes have been made that would alter factual representations.



Photograph 1

View of the west (front) elevation of the residence.



Photograph 2

View of the south elevation of the residence.





Photograph 3

View of the east elevation of the residence.



Photograph 4

View of the north elevation of the residence.





Photograph 5

View of an electrical meter on the eastern elevation of the residence.



Photograph 6

View of the electrical meter shown in Photograph 5. Note the absence of spatter marks and that markings were left when swiped with a finger.





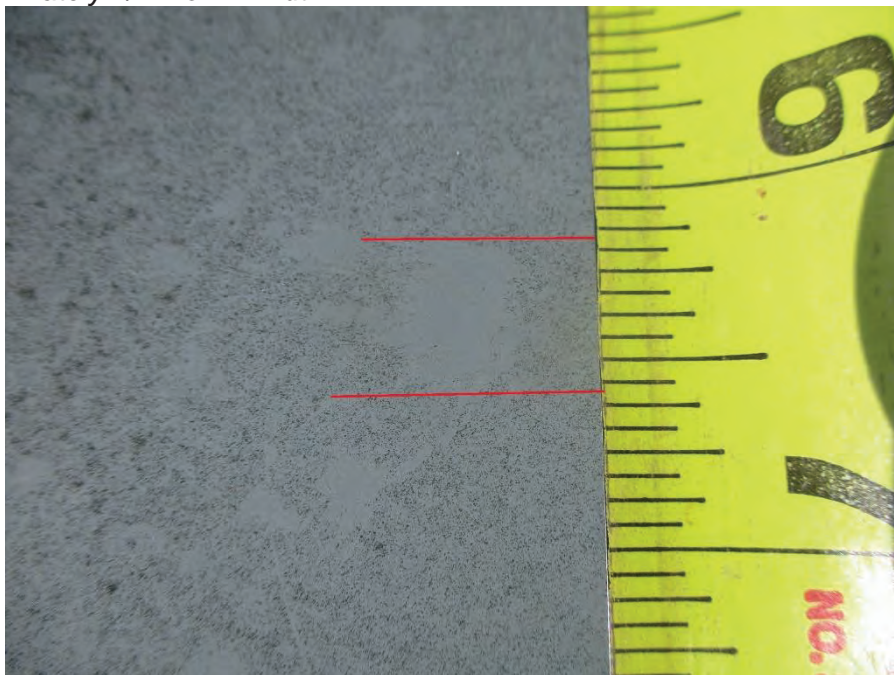
Photograph 7

View of a metal vent on a south-facing roof slope of the residence. Note the absence of spatter marks and that markings were left when swiped with a finger.



Photograph 8

View of a spatter mark on a metal roof panel of the detached storage building. Note that the spatter mark measured approximately 1/2-inch in width.





Photograph 9

View of an indentation in a gutter downspout on the western elevation of the residence. Note that the indentation measured approximately 5/16-inch in width.



Photograph 10

View of a metal vent on a south-facing roof slope of the residence. Note the absence of indentations.





Photograph 11

View of a soft metal appurtenance on the roof of the residence.



Photograph 12

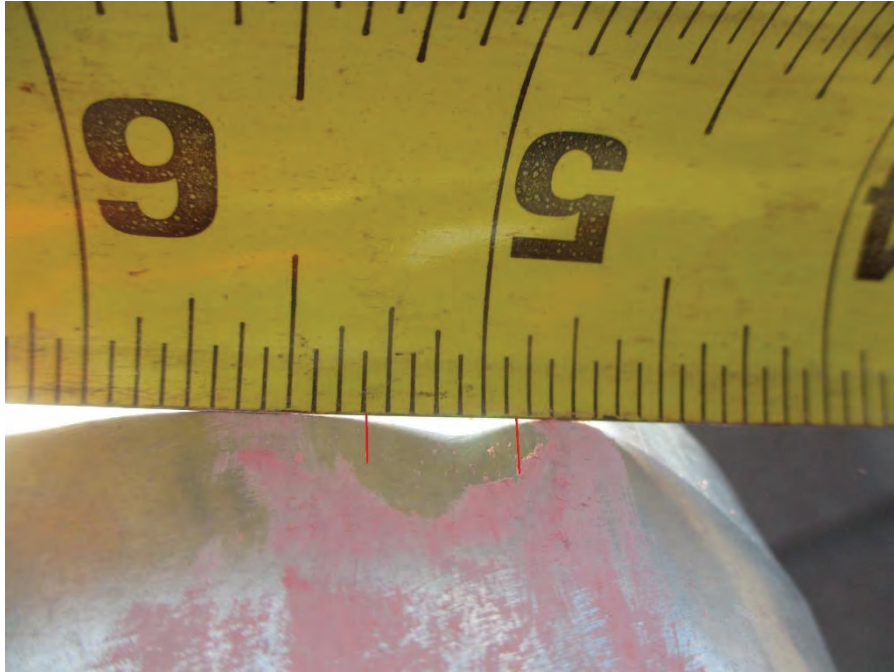
View of indentations in the soft metal appurtenance shown in Photograph 11.





Photograph 13

View of the width of one of the indentations shown in Photograph 12. Note that the indentation measured approximately 3/8-inch in width.



Photograph 14

Overview of south-facing roof slopes of the residence.





Photograph 15

Overview of the south-facing roof slope of the garage of the residence.



Photograph 16

Overview of a west-facing roof slope of the residence.





Photograph 17

Overview of a west-facing roof slope of the residence.



Photograph 18

Overview of a north-facing roof slope of the residence.





Photograph 19

Overview of an east-facing roof slope of the residence.



Photograph 20

View of the representative condition of the roofing system at the approximate location indicated by the red square in the inset aerial photograph.





Photograph 21

View of the representative condition of the roofing system at the approximate location indicated by the red square in the inset aerial photograph.



Photograph 22

View of the representative condition of the roofing system at the approximate location indicated by the red square in the inset aerial photograph.





Photograph 23

View of the representative condition of the roofing system at the approximate location indicated by the red square in the inset aerial photograph.



Photograph 24

View of the representative condition of the roofing system at the approximate location indicated by the red square in the inset aerial photograph.





Photograph 25

View of the representative condition of the roofing system at the approximate location indicated by the red square in the inset aerial photograph.



Photograph 26

View of the representative condition of the ridge shingles at the approximate location indicated by the red square in the inset aerial photograph.





Photograph 27

View of the representative condition of the hip shingles at the approximate location indicated by the red square in the inset aerial photograph.



Photograph 28

View of the representative condition of the hip shingles at the approximate location indicated by the red square in the inset aerial photograph.





Photograph 29

View of the representative condition of the ridge shingles at the approximate location indicated by the red square in the inset aerial photograph.



Photograph 30

View of two areas of granule loss on a west-facing roof slope of the residence (indicated by the arrows).





Photograph 31

Close-up view of the areas of granule loss indicated by the arrows in Photograph 30. Note the light gray coloration of the exposed shingle mat and the exposed mat fibers.



Photograph 32

View of areas of granule loss on a shingle on a west-facing roof slope of the residence. Note the light gray coloration of the exposed shingle mat.





Photograph 33

View of granule loss along the edge of a shingle on a west-facing roof slope.



Photograph 34

View of areas of granule loss on a shingle on a west-facing roof slope. Note the relatively small size of the areas of granule loss.





Photograph 35

View of two areas of granule loss on a north-facing roof slope of the residence (indicated by the arrow).



Photograph 36

Close-up view of the areas of granule loss indicated by the arrow in Photograph 35. Note the relatively small size of the blemishes.





Photograph 37

View of an area of granule loss on a west-facing roof slope. Note the relatively small size of the blemish, the absence of granules driven into the shingle mat, and the exposed fibers of the mat.



Photograph 38

View of abrasions/areas of granule loss adjacent to a roof valley on a west-facing roof slope of the residence.





Photograph 39

View of a pattern of linear abrasions adjacent to a roof valley on a west-facing roof slope of the residence (indicated by the arrows).



Photograph 40

Close-up view of two of the linear abrasions indicated by the arrows in Photograph 39.





Photograph 41

View of widespread areas of granule loss on a south-facing roof slope of the residence. Note the absence of granule loss on the shingles in the center of the picture (indicated by the arrow).



Photograph 42

Close-up view of an area of granule loss shown in Photograph 41. Note the frequency of areas of granule loss at the location indicated by the arrow as compared to the adjacent shingles.





Photograph 43

Close-up view of the area indicated by the arrow in Photograph 42. Note the exposed fibers and light gray coloration of the shingle mat.



Photograph 44

View of widespread granule loss on an area of shingles (within the red polygon). Note the relative absence of granule loss on the adjacent shingles outside of the red polygon.





Photograph 45

View of the western elevation of the detached storage building.



Photograph 46

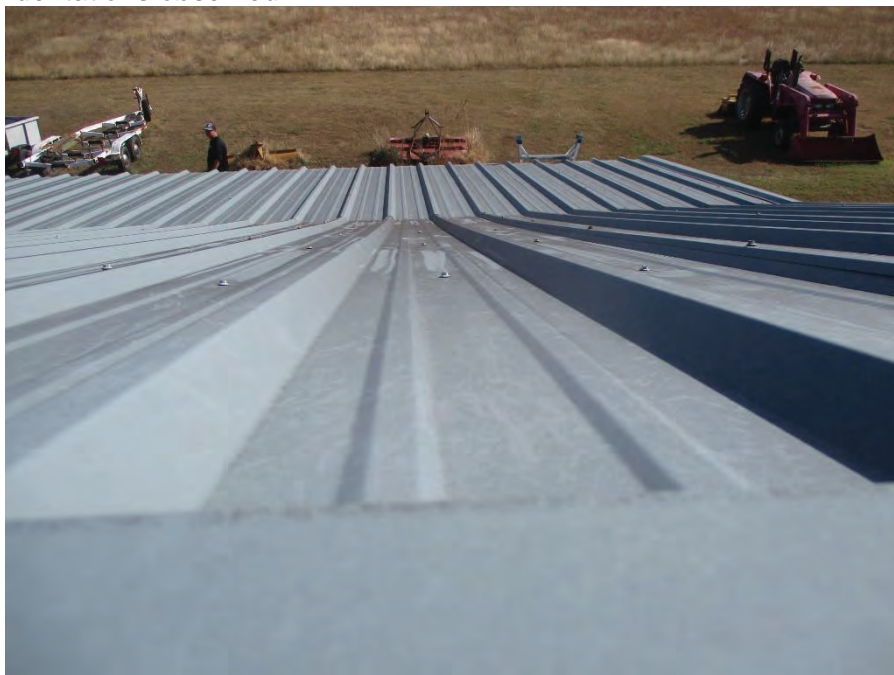
Overview of the metal panel roofing system of the detached storage building looking toward the north.





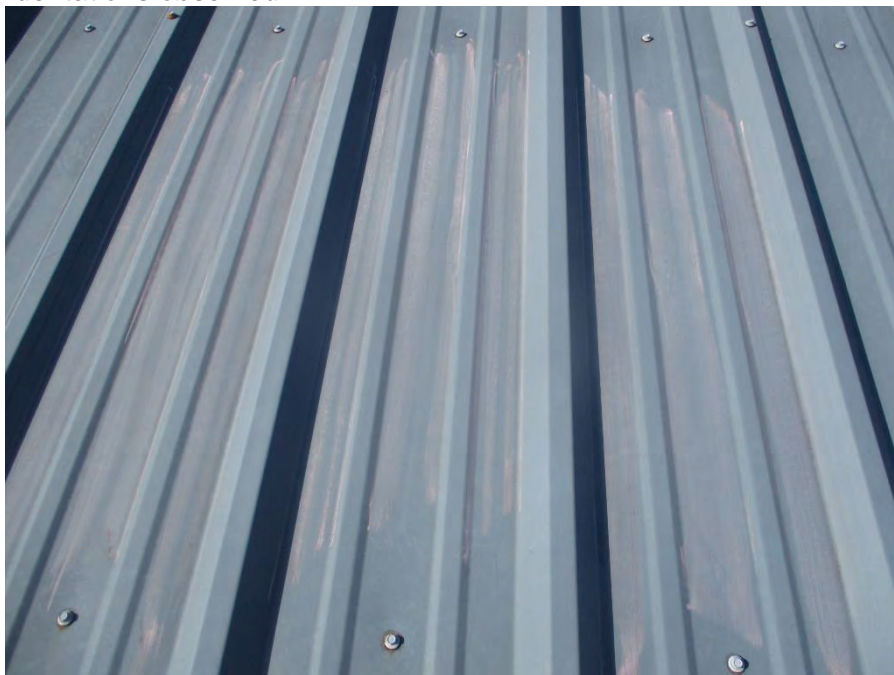
Photograph 47

View of the representative condition of the metal panels on the east-facing roof slope of the storage building with no indentations observed.



Photograph 48

View of the representative condition of the metal panels on the east-facing roof slope of the storage building with no indentations observed.





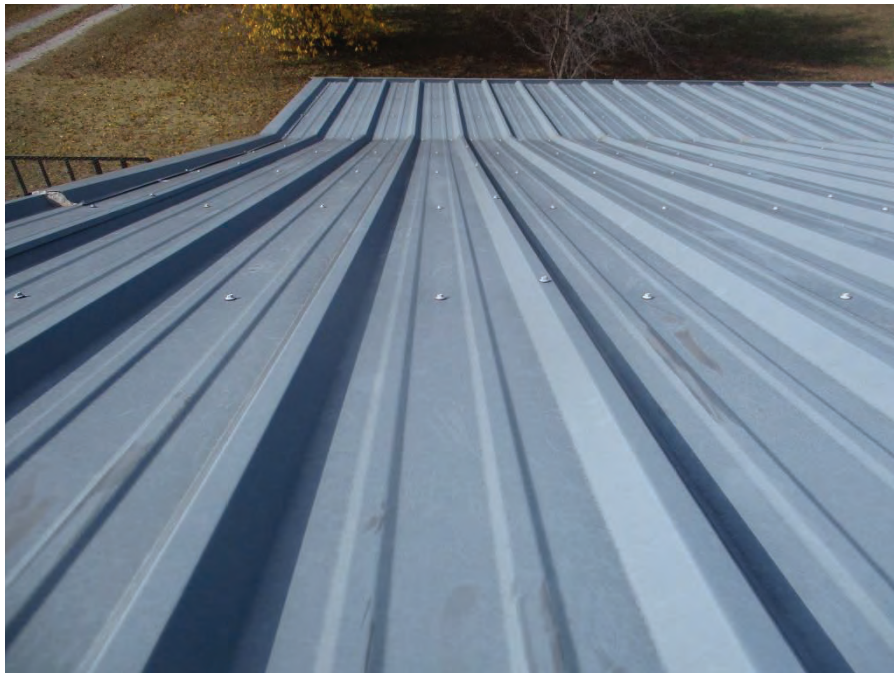
Photograph 49

View of the representative condition of the metal trim of the storage building with no indentations observed.



Photograph 50

View of the representative condition of the metal panels on the west-facing roof slope of the storage building with no indentations observed.





ATTACHMENT B

Weather Data

Storm Events Database

Search Results for Carter County, Oklahoma

Event Types: Hail

4 events were reported between 04/15/2020 and 04/29/2020 (15 days)

Summary Info:

Number of County/Zone areas affected:	1
Number of Days with Event:	2
Number of Days with Event and Death:	0
Number of Days with Event and Death or Injury:	0
Number of Days with Event and Property Damage:	0
Number of Days with Event and Crop Damage:	0
Number of Event Types reported:	1

Column Definitions:

'Mag': Magnitude, 'Dth': Deaths, 'Inj': Injuries, 'PrD': Property Damage, 'CrD': Crop Damage

Click on **Location** below to display details.

Available Event Types have changed over time. Please refer to the [Database Details](#) for more information.

Select: All Hail ▼

Sort By: Date/Time (Oldest) ▼

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
Totals:								0	0	0.00K	0.00K
RATLIFF CITY	CARTER CO.	OK	04/21/2020	23:33	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
(ADM)ARDMORE APT	CARTER CO.	OK	04/22/2020	00:12	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
HEALDTON	CARTER CO.	OK	04/22/2020	01:12	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
LONE GROVE	CARTER CO.	OK	04/22/2020	01:35	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
Totals:								0	0	0.00K	0.00K

Storm Events Database

Event Details:

Event	Hail
Magnitude	0.88 in.
State	OKLAHOMA
County/Area	CARTER
WFO	OUN
Report Source	Law Enforcement
NCEI Data Source	CSV
Begin Date	2020-04-21 23:33 CST-6
Begin Location	0N RATLIFF CITY
Begin Lat/Lon	34.45/-97.51 ~ 27.5-miles NW of Property
End Date	2020-04-21 23:33 CST-6
End Location	0N RATLIFF CITY
End Lat/Lon	34.45/-97.51
Deaths Direct/Indirect	0/0 (fatality details below, when available...)
Injuries Direct/Indirect	0/0
Property Damage	0.00K
Crop Damage	0.00K
Episode Narrative	Storms initiated along a warm front amid strong instability and enough shear for multiple storms producing very large hail up to the size of baseballs and a few brief tornadoes on the evening of the 21st.
Event Narrative	

Storm Events Database

Event Details:

Event	Hail
Magnitude	1.75 in.
State	OKLAHOMA
County/Area	CARTER
WFO	OUN
Report Source	Emergency Manager
NCEI Data Source	CSV
Begin Date	2020-04-22 00:12 CST-6
Begin Location	2NE (ADM)ARDMORE APT
Begin Lat/Lon	34.32/-97 ~ 11.3-miles NE of Property
End Date	2020-04-22 00:12 CST-6
End Location	2NE (ADM)ARDMORE APT
End Lat/Lon	34.32/-97
Deaths Direct/Indirect	0/0 (fatality details below, when available...)
Injuries Direct/Indirect	0/0
Property Damage	0.00K
Crop Damage	0.00K
Episode Narrative	Storms initiated along a warm front amid strong instability and enough shear for multiple storms producing very large hail up to the size of baseballs and a few brief tornadoes on the evening of the 21st.
Event Narrative	

Storm Events Database

Event Details:

Event	Hail
Magnitude	1.00 in.
State	OKLAHOMA
County/Area	CARTER
WFO	OUN
Report Source	Emergency Manager
NCEI Data Source	CSV
Begin Date	2020-04-22 01:12 CST-6
Begin Location	0N HEALDTON
Begin Lat/Lon	34.23/-97.49 ~ 21.0-miles W of Property
End Date	2020-04-22 01:12 CST-6
End Location	0N HEALDTON
End Lat/Lon	34.23/-97.49
Deaths Direct/Indirect	0/0 (fatality details below, when available...)
Injuries Direct/Indirect	0/0
Property Damage	0.00K
Crop Damage	0.00K
Episode Narrative	Storms initiated along a warm front amid strong instability and enough shear for multiple storms producing very large hail up to the size of baseballs and a few brief tornadoes on the evening of the 21st.
Event Narrative	Also had a 45 mph wind gusts reported.

Storm Events Database

Event Details:

Event	Hail
Magnitude	1.75 in.
State	OKLAHOMA
County/Area	CARTER
WFO	OUN
Report Source	NWS Employee
NCEI Data Source	CSV
Begin Date	2020-04-22 01:35 CST-6
Begin Location	5NE LONE GROVE
Begin Lat/Lon	34.23/-97.2 ~ 7.4-miles NW of Property
End Date	2020-04-22 01:35 CST-6
End Location	5NE LONE GROVE
End Lat/Lon	34.23/-97.2
Deaths Direct/Indirect	0/0 (fatality details below, when available...)
Injuries Direct/Indirect	0/0
Property Damage	0.00K
Crop Damage	0.00K
Episode Narrative	Storms initiated along a warm front amid strong instability and enough shear for multiple storms producing very large hail up to the size of baseballs and a few brief tornadoes on the evening of the 21st.
Event Narrative	



Weather Verification Services

Hail Verification Report

Claim or Reference #	19-00740685
Insured/Property Owner	Jeri Gill-Mckenzie
Coordinates	Latitude 34.212414, Longitude -97.123653
Date Range	Jan 01, 2009 to Nov 17, 2020
Report Generated	November 18th, 2020 at 18:38:11 UTC

Storm Events

Date	Estimated Maximum Hail Size			
	At Location	Within 1 mi / 1.61 km	Within 3 mi / 4.83 km	Within 10 mi / 16.09 km
Aug 16, 2020	--	--	1.6 in / 4.06 cm	2.5 in / 6.35 cm
Apr 21, 2020	1.2 in / 3.05 cm	1.4 in / 3.56 cm	1.5 in / 3.81 cm	1.5 in / 3.81 cm
Jun 4, 2018	--	0.75 in / 1.91 cm	1.1 in / 2.79 cm	2 in / 5.08 cm
Apr 13, 2018	0.8 in / 2.03 cm	0.8 in / 2.03 cm	1.1 in / 2.79 cm	1.1 in / 2.79 cm
Mar 26, 2018	--	0.75 in / 1.91 cm	0.75 in / 1.91 cm	0.75 in / 1.91 cm
May 27, 2017	--	--	0.9 in / 2.29 cm	2 in / 5.08 cm
May 18, 2017	--	--	0.8 in / 2.03 cm	0.8 in / 2.03 cm
Apr 10, 2016	--	0.8 in / 2.03 cm	0.9 in / 2.29 cm	1 in / 2.54 cm
May 19, 2015	--	--	0.9 in / 2.29 cm	1.2 in / 3.05 cm
Apr 27, 2014	0.8 in / 2.03 cm	0.9 in / 2.29 cm	0.9 in / 2.29 cm	0.9 in / 2.29 cm
May 20, 2013	0.9 in / 2.29 cm	1 in / 2.54 cm	1.2 in / 3.05 cm	1.3 in / 3.3 cm
Mar 30, 2013	0.75 in / 1.91 cm	0.8 in / 2.03 cm	0.9 in / 2.29 cm	0.9 in / 2.29 cm
Jun 11, 2012	0.75 in / 1.91 cm	0.8 in / 2.03 cm	1 in / 2.54 cm	1.4 in / 3.56 cm
May 22, 2011	2.1 in / 5.33 cm	2.3 in / 5.84 cm	2.6 in / 6.6 cm	3.7 in / 9.4 cm
Apr 23, 2011	--	0.75 in / 1.91 cm	0.9 in / 2.29 cm	1 in / 2.54 cm
Apr 20, 2011	--	--	0.8 in / 2.03 cm	1.2 in / 3.05 cm
Apr 14, 2011	--	0.75 in / 1.91 cm	1.5 in / 3.81 cm	1.7 in / 4.32 cm

Date	Estimated Maximum Hail Size			
	At Location	Within 1 mi / 1.61 km	Within 3 mi / 4.83 km	Within 10 mi / 16.09 km
May 10, 2010	--	--	0.8 in / 2.03 cm	1.1 in / 2.79 cm
Jul 1, 2009	--	--	0.75 in / 1.91 cm	0.75 in / 1.91 cm
May 8, 2009	--	--	0.8 in / 2.03 cm	1 in / 2.54 cm
May 5, 2009	--	--	0.9 in / 2.29 cm	0.9 in / 2.29 cm
Feb 10, 2009	--	--	0.75 in / 1.91 cm	1.9 in / 4.83 cm

- Hail dates begin at 6am CST on the indicated day and end at 6am CST the following day.
- Dash "--" indicates 0.75 in / 1.91 cm or larger hail was detected within 3 mi / 4.83 km, but not at location.
- Hail sizes being reported within this report start at 0.75 in / 1.91 cm and increase in 0.1 in / 0.25 cm increments; rounded to the nearest 0.1 in / 0.25 cm.
- This report contains hail events between Jan 01, 2009 and Nov 17, 2020.

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StormIntel Verify® Hail History Report WeatherGuidance Forensics Unit

Report date: 11/24/20
Claim/Reference # 19-00740685

Property Address: 34.212414, -
 97.123653

Latitude: 34.21235 **Longitude:** -97.12333
Search Period: 04/15/20-04/29/20

Date	Time	Hail Size (in.) at Location	Maximum Hail Size (in.) Within...			
			1 mile	2 miles	3 miles	5 miles
04/21/20	02:34am	1.00	1.00	1.00	1.00	1.25
End of Data		End of Data	End of Data			

Please note: "ND" (No Data) indicates that we could not verify hail of at least 0.75 inch in diameter at the property address during the requested search period. Times indicated on the report are expressed in the local time zone and should be considered approximate. The above information is based upon the examination of ground based storm reports and/or radar indicated hail detection algorithms. If you need help interpreting the report, please contact our Forensic Weather Verification Unit for assistance. Any person(s) ordering or otherwise utilizing this report agree(s) to abide by the terms, conditions and disclaimers outlined in the Terms of Service/End User License Agreement (TOS/EULA) which can be found at www.weatherguidance.com/eula.html



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